STCG Subcon Subgroup Meeting Minutes

July 18, 2000

Introductions/Announcements (Arlene Tortoso)

Arlene opened the meeting. Introductions were made around the table for the benefit of Dirk Dunning (Oregon Office of Energy), who was participating by phone. Arlene announced that Mike Thompson will participate in the Subgroup now to represent the Groundwater/Vadose Zone Integration Project.

Review Minutes from Last Meeting (Facilitator)

The facilitator reviewed the minutes from the June 6, 2000 meeting. Dennis Faulk requested an editorial change, which has since been made.

Updates

Upcoming Carbon Tetrachloride ITRD Workshop (Arlene Tortoso)

A Carbon Tet ITRD Workshop is planned for August 22-23. BHI is working with Duke Engineering to do the first PITT in the Z-9 crib. There are weekly conference calls between BHI and Duke while their proposal is being prepared. The proposal and cost estimate are due at the end of this month. Drilling will be done in November. In the meantime, Dennis Faulk stated that he would push forward with a ROD amendment for the whole carbon tet plume.

TechCon Vendor Searches and Pre-Qualification (Pete Molton)

The TechCon Program, sponsored by the U.S. Department of Energy's Office of Environmental Management (EM), provides technical assistance for environmental restoration to DOE site project teams. EM is using TechCon to find commercially available technologies to help achieve its cleanup mission. TechCon has validated 1400 vendors to date. The TechCon web site has recently been redesigned to enhance support of this effort. The TechCon newsletter is now available on the website at the following address: http://web.ead.anl.gov/techcon/. The contact person for TechCon web site input, Lee Northcutt, can be reached at northcutt@anl.gov.

In late June, a multi-site test of a non-intrusive characterization technology began at the Oak Ridge site. It will be followed by tests at Fernald and Ashtabula that will last approximately one month. At Oak Ridge, efforts will be made to locate buried containers in a landfill, examine the shape, location, and depth of trenches and pits, and identify the location and concentrations of TCE, 1,1,1-DCE, and Tc-99 in groundwater. Efforts will also be made to locate uranium and beryllium contamination under a building slab and in soil.

TechCon has assembled an independent Confirmation Team including technical representatives from CMST, ITRD, NETL-Industry Programs, and the SubCon Focus Area to review data provided by the vendor against existing characterization and new samples collected after the test. The Confirmation Team will prepare a characterization technology Validation Report containing findings and recommendations for further use of the technology. The report is expected to be available on the TechCon web site by September 1.

Dale Pflug wants to come to Hanford for the ITRD meeting in August to talk to the Subgroup. TechCon wants to follow up on SCFA comments by talking directly to individual project teams. They plan to work with the sites next year to select a few needs, then work with the owners of the needs to try to identify vendors that could help. Pete needs to talk to BHI about their list of vendors.

DOE's R&D Portfolio Review (Jerry White)

Jerry provided copies of the final draft of a DOE-HQ document called *Adequacy Analysis of the Environmental Quality Research & Development Portfolio*, prepared by the Strategic Laboratory Council (SLC). Gerald Boyd and Carolyn Huntoon have already been briefed on the document. If anyone has comments, they should be sent to Jerry.

The SLC states that the first-priority underfunded needs are in the Subcon area. Good work is being done to focus on the near-term needs, but very little is being done to address long-term issues (especially D&D). The SLC's conclusion is that the portfolio is significantly underfunded.

They SLC was asked to address the following questions:

- Do we have the right things in the R&D portfolio?
- Is there adequate funding?

The National Academy of Sciences (NAS) is now looking at the quality of the science in the R&D portfolio.

ROI Model for Hanford and the DOE Complex (Jerry White)

The DOE Complex uses a complicated system of developing cost/benefit analyses to justify demonstrations/deployments of new technologies. Often, the results show that it is not practical to implement the new technologies. Most sites do a poor job of reporting cost savings estimates.

Hanford decided to use the Return-on-Investment (ROI) system used by the Pollution Prevention Program. The new technology is compared with the baseline and savings are projected over time. Congress likes this approach, and the Hanford projects already know how to do it. Bechtel Hanford and Fluor Hanford are using the approach now. Gerald Boyd was shown the approach a couple of months ago. Now the concept has been more fully developed and will be presented to HQ in a couple of weeks. At the next Subgroup meeting, Jerry will

provide handouts and present the results of the upcoming HQ meeting.
There are still a few issues, such as how to include risk and safety benefits. Perhaps they should be dealt with qualitatively. Savannah River is also working on this. All the sites are concerned about IPABS issues.

Dirk Dunning stated that he applauds the major thrusts that Jerry has identified. Arlene mentioned that often the first-year cost of deploying a new technology is high, and the cost savings usually come in the out-years. A site can learn a lot from its first deployment, and it usually gets cheaper as you go to multiple deployments.

ER Tech 2000 Conference (Tom Ferns)

Tom provided an overview of the ER Tech 2000 Conference that he recently attended at the Savannah River Site (SRS). The conference was mainly focused on SRS problems and technology needs. There were lots of technologies discussed for TCE in eight-foot-deep wells, which aren't relevant to the Hanford Site.

Thomas Heenan, an SRS technology advocate, presented an excellent keynote address. There has been an evolution of remediation at SRS, from "muck and truck" to chemical plants to more passive technologies (e.g., phytoremediation, bioremediation, monitored natural attenuation). The University of Washington was at the conference to discuss phytoremediation of TCE and tritium using cottonwoods. They are pumping contaminated water from the aquifer and spraying it directly on the trees. For monitored natural attenuation, SRS has found that they must tell the public what they are monitoring for to see if degradation is occurring.

One technology that was featured at the conference was the Geosiphon Remediation System. The river is lower than the groundwater at SRS, so they run the groundwater through a siphon system and into a treatment system. This technology runs continuously and no pumps are needed.

The SRS Purge Water Management System was also a featured technology. Hanford is planning to demonstrate one of these units. Another technology being used at SRS is Dynamic Underground Stripping, which uses steam to mobilize pockets of subsurface contamination. Of course, their scale is much smaller than Hanford's.

Arlene stated that DOE should try to get information about remediation efforts at DoD, NASA, and EPA sites. Dennis Faulk said that EPA watches these activities, and they are not doing anything different from what we're doing (e.g., trying six-phase heating in Alaska). Dennis agreed to put Arlene on the EPA mailing list for technology tracking information. Additional information can be obtained from the following:

www.epa.gov/tio

http://clu-in.org

fax (301) 589-8487

Ground Water Remediation Technologies Analysis Center (GWRTAC):
www.gwrtac.org

Subcon Issues Related to the Movement of Waste (Dirk Dunning)

Waste appears to be moving in different ways than was thought in the past. The behavior of rivers in times of floods is interesting. Sometimes water moves laterally in unsaturated zones and then moves down. As mentioned below, there is a 10-to-1 preference for horizontal versus vertical flow in the 200-West Area at Hanford. Dirk articulated the following two issues facing Subcon:

1) It is clear now that the dominant water transport path in the vadose zone in partially saturated conditions is horizontal transport on the sand lens boundaries. The ratio of horizontal to vertical transport ranges from 2-3 in 200-East to 10 in 200-West. This has dramatic implications for cap and barrier designs. Liquid infiltration through the surface may potentially move waste from great distances laterally. This suggests either that the cap and barriers must be designed to extend more than 10 times the depth to the bottom of potential waste laterally - which would consume huge amounts of surface area, barrier materials, and ecological resources. Or, some other means must be devised to prevent the lateral movement of water from outside the cap and barrier, or of the waste under the cap and barrier. One fairly obvious possibility is to trench around the waste and put in an impermeable wall that would be completely covered by the cap and barrier. However, this is possibly contra-indicated by the second problem.

2) Dr. Russel Randall and his colleague, Randall Price, presented a paper at the last IPEP meeting. One of the stunning conclusions they reached from analysis of historical gamma borehole logs is that bentonite clay causes movement of radioactive waste. This is presumably due to wicking of moisture. This has serious implications both for cap and covers and for potential cutoff curtain walls (as suggested in issue 1 above). Research is needed for alternatives that do not exhibit this behavior on the waste side and do cause vertical transport of water flowing from outside the cap and cover area.

Arlene agreed to pass Dirk's cap/barrier issues on to the responsible project manager, Bryan Foley. Perhaps we need to create some new science needs for waste transport. Or perhaps we need to create some new technology needs for retrieval of waste or in situ immobilization of waste sites. Arlene noted that the EMSP proposals deal with the movement of waste. Jim Hanson added that Andy Ward and Glendon Gee's work on the Groundwater/Vadose Zone Integration Project is relevant. Dirk agreed to talk with them. Arlene will pass these issues on to Mike Thompson.

Dirk had other issues dealing with cesium, lead, humic and fulvic acid, tritium, and uranium. Arlene promised to pass the issues on to the appropriate project managers to be addressed. Jim

Hanson stated that Dirk is raising the issues at the right time. The projects will discuss them and decide if they need to develop any new S&T needs.

Status Report on Selected S&T Needs (Scott Petersen)

Scott discussed the status of the following S&T needs:

- RL-SS12 (priority 2) – Cost-Effective, In Situ Remediation in the Vadose Zone of One or More of the Following Radionuclides: Uranium, Plutonium, Cesium, Cobalt, and Strontium-90
- RL-SS17 (priority 2) – Long-Life Waste Isolation Surface Barrier

RL-SS12 is mainly focused on in situ treatment of Sr-90 in vadose zone soils deeper than 15 feet. Numerous contaminated soil sites exist at Hanford as a result of liquid effluent discharges to the soil column. In situ treatment is required if the contamination is at depths greater than 15 feet, since excavation costs become prohibitive. BHI Technology Applications has looked at various in situ remediation technologies. Currently, MSE in Montana is doing work for the 100-N Springs ITRD Project to evaluate soil flushing as a means to get the Sr-90 out of the aquifer.

RL-SS17 covers the design and testing of long-life barriers. Surface barriers are remediation options for Hanford waste sites contaminated with low-level radionuclides and transuranics and/or chemical contaminants. The "Hanford Barrier", the most robust barrier design presently identified, was tested with irrigation water for three years. Next year, BHI plans to start studies leading to construction and monitoring of a "Modified RCRA C Barrier". It was suggested that we need an update on the barrier program at a future meeting. Also, new TTPs are currently being written for vadose zone characterization ($425K) and surface barriers ($200K). Bill Bonner agreed to get these TTP owners to present their plans at the next meeting.

Facilitation of Technology Demonstrations and Deployments (Dennis Faulk)

Dennis stated that there was a strong push from the STCG Ad Hoc Committee to not resurrect the Hanford Technology Deployment Center (HTDC) concept. The HTDC was originally focused on streamlining the procurement process and the regulatory process at the Hanford Site. He suggested that the Subgroup should brainstorm about why the Subgroup exists and what it can do to help facilitate technology demonstrations and deployments. His suggestion is that we make sure to get the right project managers (DOE, contractors, and regulators) in the room when we have technology presentations. We need to restructure the agendas so people have a clear picture of what will be discussed at the meeting.

Arlene Tortoso provided her perspective that the Subgroup is here to promote technologies and disseminate information across the Site. However, we don't always get the participation we need.

Jim Hanson said that the Subgroup is here to help the projects identify future S&T needs for the

out-years. There has been a lot of growth over the past six years. The Subgroups have excellent S&T needs in place now. We also have Technology Insertion Points (TIPs) and a Groundwater/Vadose Zone S&T Roadmap. Both the TIPs and the Roadmap contain the schedule for the S&T needs. The Subgroup helped to get all of this accomplished.

Dennis Faulk asked what the Subgroup's role is related to technology demonstrations and deployments

Dirk Dunning noted that many technologies never get into the Site due to barriers and lack of interest from the projects. The Subgroup could help eliminate barriers and stimulate interest among the projects.

Wayne Martin said that the Subgroup's role is to put technologies on the table for the projects to learn about them. In addition, the Subgroup garners support for technologies from the regulators, stakeholders, and Tribes.

Mike Thompson noted that STCG site support for technologies carries a lot of weight at SCFA in their funding decisions. Jim Hanson added that STCG support of In Situ Redox Manipulation (ISRM) made it a success.

Dirk Dunning mentioned that the Subgroups have discussions early in the technology life cycle and work through any issues. He suggested that we bring in a Cavanaugh Mims to get things done.

Dennis Faulk asked how the Subgroup could be more effective in getting demonstrations and deployments to occur. Funding is the key issue. We need a technology investment pool at the Site. We also need a champion to facilitate things.

Arlene Tortoso asked how to get outside information into the Hanford Site. It was noted that ITRD does this, and the TechCon website can help. Arlene suggested that someone should scour the system to find all potential solutions for our S&T needs. That person could focus on only one S&T need per month.

Jerry White noted that there is not much direction from DOE-RL management to make the STCG important. The contractors will put in an effort where DOE says it's important. It's a resource issue; the contractors need time and money to make things happen.

Jim Hanson mentioned that Pete Knollmeyer wants the contractors to be much more involved in the STCG.

Jerry White mentioned that Tom Heenan (SRS) "hammers" the Savannah River contractors to get things done. We need to record action items at our meetings and make sure to follow up on them. Harry Boston wants the STCG to work. We need to give him feedback on what needs fixing. The Subgroup should identify issues for Arlene to take to her monthly meetings with Harry. Arlene noted that she is not getting enough support from her management to get

technologies deployed.
Mike Thompson said that everyone supports the concept of technology demonstrations and deployments, but their response is "show me the money". SCFA is always asking how many sites a technology will support. Our contaminants and our S&T needs here at Hanford are different from the other DOE sites, and there is not enough money in the pot. The ITRD Program has been very successful at doing what the ER Program should be doing at Hanford.

Jerry White stated that the STCG Management Plan is too "wishy washy". The Plan needs to force things to happen.

Wayne Martin noted that STCG signature power helps to get funding for technology activities. Mike Thompson added that proposals to SCFA need letters of support from Site users and the STCG.

Dennis Faulk suggested that the Site should narrow down its list to a few S&T needs that we are going to focus on for the next five years in order to make something happen. Jerry White agreed and stated that this Subgroup should identify one or two key issues to focus its efforts on.

Dennis Faulk said that the Site needs to own the cleanup problems and kick in funding to help solve them. Jerry White added that leveraged dollars from the Site would help us get more SCFA funding.

Mike Thompson stated that we must convince senior RL management of the return on investment in technology. We need to articulate the risks and impacts of not going forward.

Jerry White suggested that the contractor should identify the top priorities and present them to the Subgroup. Arlene Tortoso added that an effort should be made to develop a strategy to address the key problems, including specific technologies to be used (e.g., strategies for dealing with specific plumes). Jerry White also said that we need to identify technology gaps.

Dennis Faulk asked how our Subgroup could make its top priorities the top Site priorities.

Abdul Dada suggested that we also need to develop a cost/benefit analysis.

Mike Thompson stated that we need to identify: the issue, our recommendation, and the ROI for deploying a technology to resolve the issue.

Jim Hanson noted that next year, S&T is supposed to be integrated with groundwater/vadose zone remediation.

Action Items

1. Talk with BHI about their list of vendors (Pete Molton).
2. Put Arlene Tortoso on the EPA mailing list for technology tracking information (Dennis

Faulk).

3. Pass Dirk Dunning's waste movement issues to the appropriate project managers to be addressed (Arlene Tortoso).
4. Talk with Andy Ward and Glendon Gee regarding their work on the Groundwater/Vadose Zone Integration Project (Dirk Dunning).
5. Request an update on the barrier program at a future meting (Arlene Tortoso).
6. Ask TTP owners for vadose zone characterization and surface barriers to present their plans at the next meeting (Bill Bonner).
7. Restructure meeting agendas to clarify technology presentations (Facilitator).

Attendees

Bill Bonner (PNNL)
Craig Cameron (EPA)
Abdul Dada (BHI)
Dirk Dunning (Oregon Office of Energy), by phone
Linda Fassbender (PNNL)
Dennis Faulk (EPA)
Tom Ferns (DOE-RL)
Jim Hanson (DOE-RL)
Ron Jackson (BHI)
Zelma Maine-Jackson (Ecology)
Wayne Martin (PNNL)
Pete Molton (PNNL/Techcon)
Scott Petersen (BHI/TA)
Gordon Rogers (HAB)
Dan Tano (DOE-RL)
Mike Thompson (DOE-RL)
Arlene Tortoso (DOE-RL)
Jerry White (BHI)

Wrap-Up (Arlene Tortoso)

The next Subcon Subgroup meeting is scheduled for August 8 in Room 1B-40 of the Bechtel Building. Candidate agenda items include:

- Status Report on Selected S&T Needs (Scott Petersen)
- Hanford Workscope from Various Sources (Scott Petersen)
- Briefing on two new TTPs for this fall (Glendon Gee and/or Andy Ward)
- New Groundwater/Vadose Zone Needs (Mike Truex and Mark Freshley)
- BUG Guidance (Jim Hanson) and TIPs for High-Priority S&T Needs (Abdul Dada)
- Report on Gerald Boyd's Senior Management Council (Scott Petersen or Abdul Dada)
- Update on HTDC Ad Hoc Committee (TBD)